

THE CLAIMS

1-36. (Cancelled)

37. (Previously Presented) A method for processing signals in a multi-signature system comprising the steps of:

receiving a signal that is a linear combination of a set of non-orthonormal signature signals that has undergone some distortion;

cross-correlating the received signals with a set of correlating signals; and

determining the set of correlating signals by requiring the correlating signals to be orthogonal and minimizing a least-squares-error between the signature signals and the set of correlating signals.

38-39. (Cancelled)

40. (Previously Presented) A method for processing signals in a multi-signature system comprising the steps of:

receiving a signal that is a linear combination of a set of signature signals that has undergone some distortion;

cross-correlating the received signals with a set of correlating signals; and

determining the set of correlating signals by requiring the correlating signals to be geometrically uniform and minimizing a least-squares-error between the signature signals and the set of correlating signals.

41. (Cancelled)

42. (Previously Presented) A method for processing signals in a multi-signature system comprising the steps of:

receiving a signal that is a linear combination of a set of signature signals that has undergone some distortion;

cross-correlating the received signals with a set of correlating signals; and

determining the set of correlating signals by requiring the correlating signals to be orthogonal and minimizing a least-squares-error between the set of correlating signals and a set

of decorrelator signals $v_m(t)$ corresponding to $\mathbf{V} = \mathbf{S}(\mathbf{S}^*\mathbf{S})^{-1}$ where \mathbf{S} is the matrix corresponding to the signature signals.

43. (Previously Presented) The method of claim **37**, wherein the set of correlating signals is a set of projected orthogonal signals.

44-45. (Cancelled)

46. (Previously Presented) The method of claim **40**, wherein the set of signals is a set of projected geometrically uniform signals.

47-55. (Cancelled)